

Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

Rec'd PCT/PTO

10 NOV 2005

PCT/JP2003/015343



(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 03-116 TOK	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/JP2003/015343	International filing date (day/month/year) 01 December 2003 (01.12.2003)	Priority date (day/month/year) 02 December 2002 (02.12.2002)
International Patent Classification (IPC) or national classification and IPC G03F 7/11, C08G 77/14, H01L 21/027		
Applicant TOKYO OHKA KOGYO CO., LTD.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☐ (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:
 - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ (sent to the International Bureau only) a total of _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Box No. I | Basis of the report |
| <input type="checkbox"/> Box No. II | Priority |
| <input type="checkbox"/> Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input checked="" type="checkbox"/> Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input checked="" type="checkbox"/> Box No. VI | Certain documents cited |
| <input type="checkbox"/> Box No. VII | Certain defects in the international application |
| <input checked="" type="checkbox"/> Box No. VIII | Certain observations on the international application |

Date of submission of the demand 22 June 2004 (22.06.2004)	Date of completion of this report 25 February 2005 (25.02.2005)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____, which is language of a translation furnished for the purpose of:

- ☐ international search (under Rules 12.3 and 23.1(b))
☐ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☒ The international application as originally filed/furnished

☐ the description:

pages _____, as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ the claims:

pages _____, as originally filed/furnished

pages* _____, as amended (together with any statement) under Article 19

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ the drawings:

pages _____, as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

Box No. IV Lack of unity of invention

1. ☐ In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
☐ paid additional fees.
☐ paid additional fees under protest.
☒ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
☒ not complied with for the following reasons:

Claim group 1: The subject matters of claims 1-5 relate to a composition for forming a reflection preventive film, (1) obtained by dissolving (A) a ladder silicone copolymer consisting of (a1) 10 to 90 mol% of (hydroxyphenylalkyl)silsesquioxane units, (a2) 0 to 50 mol% of (alkoxyphenylalkyl)silsesquioxane units and (a3) 10 to 90 mol% of alkyl- or phenylsilsesquioxane units, (B) an acid generating agent capable of generating an acid by heat or light and (C) a crosslinking agent into an organic solvent, and (2) capable of forming a reflection preventive film with the optical parameter (k value) for an ArF laser kept in a range from 0.002 to 0.95.

Claim group 2: The subject matters of claims 6-9 relate to a ladder silicone copolymer containing (hydroxyphenylalkyl)silsesquioxane units and alkylsilsesquioxane units.

The ladder silicone copolymers as technical features of both the claim groups have some in common, but they are not the same or corresponding technical features.

4. Consequently, this report has been established in respect of the following parts of the international application:

- ☐ all parts.
☒ the parts relating to claims Nos. 1-5

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Claims

1-5

YES

Claims

NO

Inventive step (IS)

Claims

2-5

YES

Claims

1

NO

Industrial applicability (IA)

Claims

1-5

YES

Claims

NO

2. Citations and explanations (Rule 70.7)

V Document 1: WO, 02-091083, A1 (Shipley Company, L.L.C.), 14 November, 2002 (14.11.02), page 6, line 15 to page 10, line 19, claims 52-74
Document 2: JP, 2002-72489, A (Shipley Company, L.L.C.), 12 March, 2002 (12.03.02), claims 1 and 11

The subject matter of claim 1 does not appear to involve an inventive step in view of the well-known techniques described in documents 1 and 2 cited in the ISR, etc.

Document 1 does not describe that both the ingredients (B) and (C) are mixed simultaneously in combination.

However, containing both the ingredients (B) and (C) is known also in the case where they are used for the particular application of the present invention, as described in document 2.

Furthermore, it is not considered difficult for a person skilled in the art to let also an underlying resist layer further contain a crosslinking agent.

The introduction of a crosslinking agent can be employed as required for imparting durability, etc.

Meanwhile, the applicant insists that it is not described either using ingredients (B) and (C) together or having a specific optical parameter.

With regard to this matter, the particular means for adjusting the range of the k value of the present invention is unknown, and in addition, the range is so wide as to include the usually conceivable range. Furthermore, the use as an underlying resist layer on a substrate of a multi-layer resist is described. So, it cannot be supposed that documents 1 and 2 do not satisfy the range of the k value.

The subject matters of claims 2-5 are not described in any of the documents cited in the ISR, and it is not considered to be obvious for a person skilled in the art that a linear polymer substantially supposed in the present invention is further contained.

Meanwhile, the novelty and the inventive step were judged based on the specific application and the specific linear polymer contained.

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Box No. VI Certain documents cited

1. Certain published documents (Rule 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
JP 2004-38143 A [E, X]	05.02.2004	28.02.2003	03.03.2002

2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure	Date of non-written disclosure (day/month/year)	Date of written disclosure referring to non-written disclosure (day/month/year)

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

(a) The particular constituent feature of being "capable of forming a reflection preventive film with the optical parameter (k value) for an ArF laser kept in a range from 0.002 to 0.95" described in claim 1 is unknown.

Furthermore, the range depends on the main ingredient and cannot be considered to include special values.

(b) A reflection preventive film merely describes a nature of the film, and is not limited to the application as "a composition for forming a reflection preventive film between a substrate and a resist film in a resist material used for producing a semiconductor device by a lithographic process" intended in the present invention.

However, in the present explanation, the novelty and the inventive step of the invention were judged as "a composition for forming a reflection preventive film" used for the application.

(c) As the "linear polymer" stated in claims 2-5, only the specific acrylate type polymer stated on page 15 is stated, and none of the linear polymers are sufficiently supported.

Meanwhile, the applicant states that all "linear polymers" have an equivalent effect, but it is not considered that (1) the presently stated subject matter of claim 1 has a technical feature, or (2) the specification describes all "linear polymers."